Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Proposal for application of coherent control to qubit readout in circuit QED ERAN GINOSSAR, LEV BISHOP, DAVID SCHUSTER, STEVEN GIRVIN, Yale University — High fidelity readout of superconducting qubits in circuit-QED requires effective protocols for mapping the 0,1 computational basis states onto macroscopically distinguishable states of the system. We explore the possibility of conditionally steering the system from the computational basis into quasi-coherent latching states of the Jaynes-Cummings Hamiltonian. We discuss the applicability of methods inspired by quantum optics and quantum control theory to this problem, based on realistic physical considerations pertaining to the transmon superconducting qubit.

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Date submitted: 19 Nov 2009 Electronic form version 1.4